New media practices in India: bridging past and future, markets and development

Article (Published Version)

International Journal of Communication 5 (2011), 349–379 1932–8036/20110349

IJoC
new media in international contexts

New Media Practices in India: Bridging Past and Future, Markets and Development

ANKE SCHWITTAY
Centre for Development Studies
University of Auckland

This article provides a review of the academic and popular literature on new media practices in India, focusing on the country's youth's use of mobile phones and the Internet, as well as new media prosumption. One particular feature of the Indian case is the confluence of commercial exploitation of new media technologies and their application for development purposes in initiatives that aim to bring these technologies to marginalized segments of the Indian population. Technology usage in turn is shaped by the socioeconomic location of the user, especially in regards to gender and caste. The potential of new media technologies to subvert such social stratifications and associated norms has inspired much public debate, which is often carried out on the Internet, giving rise to an online public sphere. In all of the writings reviewed here, the tension surrounding new media technologies as a meeting place of the old and the new in India is paramount.

The articulation of Information and Communication Technologies (ICT) and India brings to mind names like Infosys and Wipro. Indeed, the country's home-grown IT industry is the foremost example of India's participation in the global information economy. Generating 5.5% of the national GDP in 2008,[2] the rise of India's IT industry was facilitated by the government's deregulation of the telecom industry from the mid–1990s. Despite the setbacks to the industry resulting from the Mumbai attacks and the Satyam

Anke Schwittay: a.schwittay@auckland.ac.nz
Date submitted: 2009–11–14

[1] I thank Heather Horst for giving me the opportunity to join this project and for guiding me through its various stages. Comments by Mimi Ito, HyeRyoung Ok, Becky Herr, and especially Cara Wallis and Heather Horst helped improve this article, as did two anonymous reviewers of the *International Journal of Communication.*

[2] This amounts to US$64 billion in annual revenues. See http://www.nasscom.org/upload/Annual_Report07-08.pdf

scandal,[3] the IT industry will continue to be the destination of thousands of young Indians, fulfilling their and their families' aspirations to a better life.

Acquiring computer skills is seen as crucial to joining this national destiny, and there are large numbers of private schools training young people in marketable and commercial computer skills (Xiang, 2007). Call centres, which structure their workers' engagement with global flows of new media technologies, provide another kind of sought-after job (McMillin, 2008). IT jobs also affect the social life of middle class families by giving rise to "a new generation of young professionals who are often the first in their families to have a debit card, benefits, to live alone or with roommates" (McKenzie, 2007, p. 9; Mirchandani, 2008). These changes are accompanied by transformations in generational relationships, sexual mores, and power hierarchies—transformations that do not go uncontested.

The cultural politics emerging from the material and cultural practices of the IT industry, and technology engagement more generally, unsettle many of the prevailing assumptions through which Indian identities have typically been understood and point to new relations of race, belonging, and colonialism (Shome, 2006; Mitra, 2008). They also result in attempts by traditional authorities to control the new media use of young people through discourses on sexual danger and moral panic (Ravindran, 2008). Young people in turn are using the same media to fight back, by presenting technological progress as unstoppable.

About 17% of the Indian population are between 15 and 24 years old, and they are experiencing the changes brought by new media technologies most dramatically in their personal and professional lives. The new media practices of these young Indians are the focus of this review, which situates such practices within the larger context of the role of ICT in India's economic, political, and sociocultural life. Furthermore, what is commonly referred to as "Indian youth" is a heterogeneous group, whose socioeconomic stratifications greatly affect how its members engage with new media technologies. Correspondingly, the literature on new media practices in India reflects the different relationships Indians have with ICT: Indians are represented as either technically savvy techno-elites or as poverty-stricken subjects who need help to bridge the digital divide (Leung, 2008).

This article represents a selective review of this literature. The larger national context, and especially the divisions that structure Indians' technology engagement, is explored in the first part of the article. Of particular interest is the tension between the commercial consumption of new media technologies by the country's growing middle class and the use of these same technologies for development purposes (usually referred to as ICTD: ICT and Development). Given the large number of poor Indians who can potentially be served by new media technologies, commercialization and ICTD are coming together in so-called Bottom of the Pyramid (BoP) initiatives. Attempts to provide Indians with access to computers are a good example of such programs.

Following this general overview, the article then zeroes in on three technology areas: mobile phones, the Internet, and new media prosumption, including gaming. These applications, and their order

[3] Revelations of massive accounting fraud at Satyam Computers, which was once considered a poster child of corporate citizenship, rocked the IT industry the world over in early 2009 (Vaswani, 2009).

of study, have been chosen because of their particular importance in India. Mobile phones are available to increasingly larger parts of the Indian population, and they have brought significant changes to livelihoods and lifestyles. The Internet, while not as widely accessible, is giving rise to new practices of articulating and contesting questions of being and belonging. This is especially visible in new media productions that give voice to different experiences of living in the India of today.

In each of these three sections, two cross-cutting themes emerge. One is the aforementioned heterogeneity among Indian youth, and especially the impact of gender dynamics on young men and women's use of ICT. In return, these technologies contribute to the unsettling of established social relations, which results in debate around new media practices. Many of these discussions are carried out on the Internet and are thereby giving rise to the second theme of this article, the emergence of an online public sphere. Here, matters that are important to Indian society at large are discussed by those who use new media technologies.

Methodology

First, a brief overview of the literature selection for this article is in order. I have drawn on an interdisciplinary body of academic literature from the social sciences, especially anthropology, sociology, communication, development studies, and economics, as well as from more technical fields such as computer science, engineering, and business. To bring the different methods and perspectives of these disciplines together, I have taken guidance from a recent interdisciplinary review of global mobile phone use (Donner, 2008). While acknowledging the difficulties of establishing the boundaries of such a review and of judging the relative quality of works vis-à-vis each other, such an interdisciplinary undertaking is possible because of the concentration of the still emerging literature on new media practices among Indian youth. I have concentrated on peer-reviewed articles in journals, edited collections and books, which I accessed using electronic databases, review articles, and online bibliographies. Where such publications were not (yet) available, I have included conference papers and other unpublished materials. Given the relative newness of these practices, I have not limited the timeframe of the literature surveyed here.

A large part of the academic literature is produced by Indian scholars, many of whom study or teach at U.S. or UK universities and maintain strong research ties to India.[4] While some of their findings might have been written in Hindi or other languages, the majority is published in English. This review consequently focuses on English language sources, which have been directly accessible to me. Furthermore, the academic accounts included here do not present a "census" but rather "a sample [that is] sufficiently broad, and timely enough, to represent many of the current/major theoretical and empirical discussions" about new media practices among young people in India (Donner, 2008, p. 143).

I have also included information from popular sources, mainly journalistic accounts and blogs, for two reasons. On the one hand, these accounts compensate for the lack of academic writings on the more commercial aspects of new media technology prosumption, which are an important part of how young people engage with such technologies in India. On the other hand, the time lag between practices and

[4] In parallel, many technology initiatives work with engineers and scientists of Indian descent, sometimes trained in Western universities, who are familiar with Indian contexts.

academic accounts about them is especially acute in the fast-moving world of ICT, and therefore popular accounts were sometimes the only source of information about relevant practices that I felt needed to be included in this review. To assure the quality of the information drawn from these accounts, I have concentrated on top-tier, established publications and recognized blogs. In all, in the writings reviewed here, the tension surrounding new media technologies as a meeting place of the old and the new in India is palpable. In the next section, I will sketch the contours of this space of encounter and its technology infrastructure.

A Country of Contrasts

As the world's second most populous country with almost 1.2 billion inhabitants, India is a place of marked contrasts, where age-old and modern practices coexist and the chasm between the rich and the poor is visible and palpable to all. While a third of India's population is urban, and divided between a growing middle class and vast slums, the great majority of Indians live in rural areas. The country has experienced strong economic growth, in part based on its IT industry, with rates of close to 10% in 2006–2007, slowing down to 6.7% in 2008–2009 due to the global economic recession (The Hindu, 2009). Yet in spite of these economic advances, India's social inequalities persist; the 2007–2008 Human Development Index places India 128th out of 177 countries. The drop in poverty reduction since the 1990s, as compared to the 1980s, has actually shrunk, and personal and regional inequalities are increasing (Jha, 2008).

The ways Indians have access to and make use of ICT depend on their socioeconomic position within Indian society. Such differential access is usually called the digital divide, in reference to the gap between technology haves and have-nots. However, as a study of ICT practices in India makes clear, the term labels a divide that is not actually technical in nature but part of larger divisions stemming from structural inequalities (Parayil, 2005). In other words, talking about the digital divide masks the political, economic, and sociocultural hierarchies that keep disenfranchised Indians from using ICT to the fullest extent possible. This means that the exposure of Indians, including young Indians, to new media technologies depends heavily on social locations—including gender, caste, class, and place of residence—in this highly stratified society.

ICT, on the other hand, is also seen as benefiting those who until now have remained excluded from India's high-tech dreams, through initiatives that attempt to harness the power of these technologies for development purposes. ICTD is therefore one of the main aspects of new media practices, and the academic literature about them, in India (Pal, 2003). The country's numerous ICTD projects are funded by a wide variety of actors, ranging from governments (national and state) to corporations to NGOs and foundations inside and outside the country. New technologies are deployed to provide e-government services, improve education and healthcare, and foster economic development. They are also thought to overcome gender and caste inequalities. Initial unbridled enthusiasm over the transformative impact of ICTD programs has given way to more nuanced assessments of their potentials, and to an awareness of the need to embed them within the political, economic, sociocultural, and technological contexts of their places of application (Brewer et al., 2007; Sreekumar, 2006).

On the other end of the spectrum, and mostly neglected by the academic literature, is the commercialization of new media use among young Indians. An excerpt from Ingene, which promotes itself as the "first-ever Indian youth trend research blog," reflects this commercial aspect, and highlights the aforementioned heterogeneity among young people in India:

> With the first ever non-socialistic generation's thriving aspiration & new found money power combined with steadily growing GDP, bubbling IT industry and increasing list of confident young entrepreneurs, the scenario appears very lucrative for the global and local retailers to target the "Youngisthan" (young-India). But, the secret remains in the understanding of the finer AIOs of this generation. The Indian youth segment roughly estimates close to 250 million (between the ages of fifteen and twenty-five) and can be broadly divided into three categories: the **Bharatiyas**, the **Indians** & the **Inglodians** (copyright Kaustav SG 2008). The Bharatiyas estimating 67% of the young population lives in the rural … areas with least influence of globalization, high traditional values. They are least economically privileged, most family oriented Bollywood influenced generation. The Indians constitute 31.5% . . . and have moderate global influence. They are well aware of the global trends but rooted to the Indian family values, customs and ethos. The Inglodians are basically the creamy layers . . . and marginal (1.5% or roughly three million) in number though they are strongly growing (70% growth rate). Inglodians are affluent and consume most of the trendy & luxury items. They are Internet savvy & the believers of global-village (a place where there is no difference between east & west, developing & developed countries etc.), highly influenced by the western music, food, fashion & culture yet Indian at heart. (Ingene, 2008)

The obvious commercial slant and gross generalizations of this quote are sure to raise academic eyebrows. I have included it nevertheless because it speaks to the challenge of writing about new media practices among young Indians. This group encompasses several hundred million people, and is marked by geographical, socioeconomic, and gender differences. Indian youth is therefore impossible to study, or talk about, as one homogeneous entity. Market segmentation exercises, however dubious to an academic audience, are usually the first attempt to map these differences. Understanding these differences allows companies to exploit them, reminding us of the commercial aspect of new media practices in India.

As a BRIC country, in reference to its grouping with Brazil, Russia and China, which represent the largest emerging markets based on their population size and economic growth, India holds much promise for IT companies looking for new customers. They include most obviously those young people who have enthusiastically embraced new media technologies and can afford to consume them. But they also encompass the so-called Bottom of the Pyramid, a term popularized by C.K. Prahalad, an Indian business school professor at the University of Michigan, in reference to the billions of people who live on a few dollars a day and who represent the potentially largest new market for IT companies (Prahalad, 2005). It is in Prahalad's writings about "eradicating poverty through profit" that the commercial and the development potential of ICT are articulated, and India is at the forefront of corporate attempts to develop new products and solutions for the BoP (Prahalad & Hammond, 2002).

Computers to the BoP

In 2007, only 3.17 per 100 inhabitants had personal computers at home (ITU, 2007), and these computers have been heavily concentrated in more affluent households. However, the Indian lower middle class is beginning to embrace computers enthusiastically, driven by status ambitions and aspirations of a better future for its young through access to technology and technology skills, leading to technology jobs (Rangaswamy, 2007b; Pal et al., 2007). Correspondingly, the demand for purchasing a home computer is mainly driven by high school and college age children, especially those who attend schools with low-quality ICT facilities. Computers are a compulsory subject in Indian schools, adding to the pressures to own a home computer. In the home, e-mailing, chatting, browsing, as well as computer game downloads are all subject to censorship and monitoring, especially as they are seen as distractions from learning (Rangaswamy, 2007b). Conversely, young people argue that general Internet skills, such as browsing for information about prospective schools, getting information for job interviews, and communicating with alumni, will help them in the working world.

Recognizing this increased computer consumption as an emerging market opportunity, high-tech companies have developed products and pricing models to target the lower classes. One example is Intel's and Microsoft's pay-as-you-go computer purchase program, which was unveiled in May 2006 and piggybacks on the popularity of pay-as-you-go mobile phone cards. The country's public schools are another venue where programs are put in place to connect young people to computers and the Internet.

When efforts by India's Human Resource Development Ministry, in collaboration with the Indian Institute of Science in Bangalore and the Indian Institute of Technology in Madras, to build a US$10 laptop computer did not lead to any results, the Ministry purchased 250,000 laptops for 1,500 schools from the One Laptop per Child program (OLPC) in April 2009 (Paul, 2009). A few months earlier, the government of Andhra Pradesh, the most populous state in Southern India, which has long invested in ICT, had contracted the Silicon Valley company nComputing to outfit computer labs in 5,000 schools with virtualization software that allows multiple users, all working on their own stations, to connect to one computer.[5] Yet another initiative is the multi-mouse developed by Microsoft Research India, whereby children, each with their own mouse, can play games on one computer, leading to higher student engagement (Pawar, Pal, & Toyama, 2006).

There have also been efforts to provide children with access to computers outside the formal school setting, such as the Hole in the Wall project established by Dr. Sugata Mitra. In 1999, when he was a research scientist at NIIT, Mitra installed a computer in the wall separating NIIT's headquarters from the adjacent slum of Kalkaji in New Delhi, in order to observe how children taught themselves how to use the computer (Mitra, 2005; Mitra & Rana, 2001; Mitra et al., 2005). The project was scaled across India with the help of the International Monetary Fund, and has been emulated in other countries, for example through the Digital Doorway program in South Africa.

[5] http://www.24-7pressrelease.com/press-release/ncomputing-provides-18m-andhra-pradesh-students-with-computer-access-72200.php

Figure 1. *Dr. Sugata Mitra in front of some of Kalkaji's Hole-in-the-Wall users (Photo by NIIT Technology).*

NIIT, Microsoft, and nComputing are for-profit companies that look to poor Indians—children, teens, and their parents—to cultivate future customers. The commercial potential of their future technology needs has also resulted in a unique feature of the literature about new media practices in India, namely the active participation of Microsoft Research India (MRI). MRI is a corporate research lab that has taken a leading role in the production of academic material, through its numerous publications and central participation in the discipline's flagship ICTD conferences.[6] The extensive research carried out by this group, for example around mobile phone use and rural Internet kiosks, is undertaken with an eye towards the commercial potential of new media technologies for Microsoft's Indian market.

Access to computers, and through them the Internet, has until recently been at the heart of ICTD and BoP efforts. This emphasis has shifted with the rise of mobile phones and the recognition by development practitioners and corporate executives alike that the potential of their use by all segments of Indian society is vast. Mobile phones thus present a good case of how corporate efforts to develop technologies that are affordable and user-friendly for poorer Indians can lead to their broad uptake and the subsequent design of development applications. In the next section I will take a closer look at mobile phones and the diverse ways in which they are changing Indian society.

[6] Toyama, Rangaswamy, and Donner, who will be cited frequently, are all part of Microsoft Research Lab, and other scholars have interned there as graduate students. Toyama is currently a research fellow at the School of Information at the University of California, Berkeley.

Mobile Phones

In November 2004, two students at an elite public school in New Delhi made out, for 2.37 seconds, in front of the boy's mobile phone camera. A few days later, after the couple had broken up, the boy sold the video clip for Rs. 50 to friends. When this became public, both students were expelled from their school. The video clip was then transformed into a hot-selling CD by the pornographic merchants of Palika Bazaar in New Delhi, and lastly a student at IIT Kharagpur posted the content for sale on Bazee.com, the Indian affiliate of eBay (Ravindran, 2008).

This event, which became known as the Delhi Public School Scandal, provides a good entry point into the ways in which mobile phone use by young Indians is challenging the country's social conventions. Mobile phones are also contributing to economic development and better educational and health service delivery for poorer Indians. In this section I will examine the spread of mobile phones in India, their gendered and contested uses, and their deployment for development purposes.

Mobile Phone Access

Until the mid–1990s, ownership of a telephone was considered a luxury in India, with waiting periods of up to several years for a landline, even after paying hefty application fees (Kumar & Thomas, 2006). In 2007, 3.37 per 100 inhabitants had fixed phone lines (ITU, 2007), paying an average of US$3.30 per month for their maintenance (World Bank, 2006). Mobile phones, by contrast, have become a consumer item embraced by a broad segment of the Indian population. They first arrived in India in 1995, and since then their adoption has grown exponentially, with average annual growth of 80%. In March 2009, there were 391.8 million mobile phone subscribers (IT Facts, 2009). This means that more than a third of the Indian population now owns a mobile phone, the great majority of which are GSM systems.

As of October 2008, the most important cell phone carriers were Airtel with a 25.04% market share, followed by Reliance (CDMA and GSM) with 17.93%, and Vodafone/Essar with 17.70%. A wide variety of handsets, provided by both foreign and Indian companies, caters to every niche of the Indian market. The most expensive GSM handset costs about US$12,000; it is marketed under the Nokia super premium luxury brand Vertu. Airtel and Vodafone sell Apple's 3G iPhone for about US$700, depending on capacity. On the other end of the spectrum, aiming at the BoP market, the Nokia 1200 costs 1200 rupees, which is about US$24. The CDMA handset market is firmly dominated by Reliance, which sells Blackberry smart phones for about US$620, while at the low end, Tata Indicom sells a Samsung Model for US$20, which is just under 1000 rupees. Over 60% of the population is covered by a mobile signal (ITU, 2007), and in any given coverage area, four to seven companies provide mobile phone services. Yet in spite of the dozens of tariff plans available, more people use prepaid cards than contracts (Hearn, 2006).

Mobile phones have thus become a significant presence in the social, cultural, and economic lives of Indians at all levels of society. In general, Tenhunen (2008) argues that they increase the efficiency of markets, facilitate alternative political patterns, and invigorate traditional networks of kinship and village sociality. Sooryamoorthy, Miller, and Shrum's (2008) study of mobile users in the South Indian state of Kerala found that, in contrast to e-mail and other programs, mobile phone use tended to decrease the

diversity of geographical ties. Rather than straightforward individual ownership, however, access to and use of mobile phones is mediated by the socioeconomic differences in Indian society.

Research by Donner et al. (2008) about mobile phone use in middle-class households suggests a collectivist ethos. Individuals share phones across generations (parents and children) and with their peers (siblings and, to a lesser degree, friends). In some cases this may involve simply borrowing a phone because someone is nearby, what the authors term "proximate sharing," or it may include "distributed sharing," examples of which are a parent trying to reach a child through their friend's phone. Others use their phones to contact point people who are relied upon to spread information. Donner (2007) argues that the sending and receiving of missed calls, or beeping, is another way in which individuals communicate without the outlay of money or minutes.

For marginalized Indians, mobile phone use is circumscribed by, and in turn affects, gender relations. In this group, ownership is dominated by men. A study conducted in 2006 found that compared to men, women had greater access to household-owned landlines than to individually-owned mobile phones, but had similar access to public phones and much greater access to phones owned by others (Iqbal, 2007). Even when women owned a mobile phone, it was primarily men who made the decision about how much money to allocate to its use (Iqbal, 2007). Similarly, in a study of urban Delhi, Tacchi and Chandola (Heather Horst, personal communication) found that men were the primary owners of mobile phones; women typically had to ask permission to use a mobile and were monitored while talking. On the other hand, in a recent study of West Bengal, Tenhunen (2008) notes that those women who are gaining access to mobile phones also gain greater mobility in general, although stigma associated with female mobility remains. Gender relations are thus central to the dynamics of mobile phone use. Indeed, the mobile phone has been theorized as, among other things, a masculine cultural technology (Kavoori & Chanda, 2006).

Youth Use

The enthusiasm of young Indian men for their mobile phones has been captured by videos posted on the Indian section of the Mobile Youth project (http://www.mobileyouth.org). This international youth marketing and branding company uses ethnographic research and street interviews to show its corporate clients, among them Vodafone, Disney, MTV, and Intel, the current extent and future possibilities of the Indian youth mobile market, through statements such as "by 2012, one in five of the world's mobile owning youth will live in India" and "there are more mobile owning Indian youth than people in the U.K."

Mobile Youth's YouTube Site *[video] from*
http://www.youtube.com/watch?v=tcPoVt--9UU&feature=related

This commercial potential is also resulting in a growing number of game applications for mobile phones, as I discuss below. The convergence of mobile platforms with social networking sites is visible in Virgin Mobile India's partnership with MySpace to make the latter's social networking services available on Virgin Mobile WAP-enabled phones.

There is a small but growing academic literature on mobile phone use by young Indians, especially college students (Kumar & Thomas, 2006). Chakraborty (2006) conducted a comparative study among Indian and American university students and discovered that the former relied on their mobiles more frequently as their only phone, and thus developed a different relationship to their phone than their American counterparts. Steenson and Donner (2009) note that the sharing of mobile phones complicates, and is complicated by, traditional gender roles.

Contested Devices

This unsettling of traditional mores does not go unchallenged. Ravindran (2007) shows how "moral panic agents" seek to police the proliferation of mobile phones, and especially camera phones, among young people. The Delhi Public School Scandal cited above provided fertile ground for the action of these guardians of the traditional. The media pounced on the story of the videoed embrace, seeking to associate camera phones and their young users with criminality. As a result, Anna University in Chennai, a top-ranking engineering university, banned the use of cell phones on campus and dormitories and conducted raids to enforce the ban. This action was emulated by other educational institutions, and in

2006 the Indian parliament introduced legislation that sought to regulate the use of mobile phones (Ravindran, 2008). Young people, in turn, used new media technologies to debate these developments in blogs and discussion forums, countering the moral danger discourse by presenting technological progress as unstoppable.

Ravindran (2008) has also analyzed how moral panic agents are using the (Tamil) vernacular press as a mouthpiece. Sensationalist headlines read: "Cell Phone Revolution: Satan in Palm," "Tragedy Caused by Cell Phone: College Student Arrested for Killing Co-Student," and "Seller of Cell Phone Memory Cards with Obscene Pictures Arrested." As these headlines show, the social changes brought about by the use of cell phones are presented as scandalous, dangerous, and borderline criminal by parts of Indian society that see themselves as the protectors of traditional customs, morality, and culture. Ravindran (2007) argues that these dynamics are part of the emergence of an Indian control society that seeks to contain and police the larger transformations resulting from the use of new media technologies.

Mobile Phones for Development

A significant part of the research on mobile phones in India focuses on their potential use for development purposes. In the economic domain, access to mobile phones helps small entrepreneurs overcome information asymmetries in the market place that have traditionally led to their exploitation through middlemen. An oft-cited example is that of Kerala fishermen who find out about the best prices for their catch before landing in a particular port (Abraham, 2007; Jensen, 2007; Reuben, 2007). Donner and Tellez (2008) have undertaken preliminary studies of the emergence of m-banking among small enterprises. In spite of the existence of such novel services, small enterprises most often rely on their phones for voice and text messaging (Donner, 2009).

Besides these economic applications, mobile and smart phones are also increasingly used for healthcare delivery purposes, as was highlighted in a report by Vital Wave Consulting (2009) authored for the United Nations Foundation. The document listed a number of Indian projects that used mobile phones for education, data collection, remote monitoring, disease and outbreak tracking, and diagnostic and treatment support. The report concluded that early successes of mobile health applications, such as increased access to health-related information about hard-to-reach populations, improved abilities to diagnose and track diseases, and expanded medical education and training opportunities will lead to a rapid expansion of the mHealth field.

Especially relevant for Indian children who might not have access to formal schooling are mobile educational games that assist them with non-formal learning (Kam et al., 2007).[7] A good example is the Mobile and Immersive Learning for Literacy in Emerging Economies (MILLEE) project at UC Berkeley, which teaches rural Indian children English; the project is supported by the MacArthur Foundation (Kam et

[7] In the formal educational setting, two young Indian bankers from Chennai, in partnership with the Millennium Mathematics Project at Cambridge University, developed the HeyMath game, which provides mathematics textbooks, teaching, and assessment, as well as lesson plans over the Internet, with the use of animation tools (Friedman, 2005).

al., 2009). Drawing on children's daily lives is an application that aims to connect children's learning to real-life experience around water use (Raval, 2007).[8] Aside from examining the rural and urban locations of schools and communities, practitioner-driven written accounts of such projects pay little attention to contextualizing these interactions in participants' everyday lives. One reason for this is the studies' technological and engineering focus, which sidelines larger social questions.

In sum, because of their broad accessibility, mobile phones impact the lives and livelihoods of Indians from a wide variety of backgrounds. They hold enormous potential for development purposes, especially in the areas of economic livelihood, education, and health. Of particular importance for young people is the device's impact on gender dynamics and the social tensions emerging around this impact. It is in the latter area where important similarities to the use of the Internet can be found, which become amplified into social debates carried out in cyberspace.

The Internet

The terrorist attacks in Mumbai in November 2008 showed the pervasiveness of new media technologies in India, as connected Indians flocked to sites like Twitter, Flickr, YouTube, and blogs to post eyewitness and other accounts of the events. CNN argued that through the attacks, "social media appeared to come of age and signalled itself as a news-gathering force to be reckoned with" (Busari, 2008). The extent to which new media technologies, and especially social networking sites, contribute to the creation of an online public sphere deserves particular attention in an examination of Internet practices of Indians at home and abroad. First, however, a look at how young Indians of various backgrounds access the Internet is in order, and once again, technology spaces emerge as heavily gendered.

Getting on the Net

As pointed out above, only a small, albeit growing, percentage of Indian youth has access to computers and the Internet at home. Therefore, an important way in which young men join the Net is by way of public access points. In urban areas, Internet cafés are the primary space where first-time technology users become initiated (Rangaswamy, 2007a). A recent large-scale survey by the Nielsen Rating company of 12,000 cyber café users in eight urban centers showed that 90% of users were male and between 15 and 35 years of age (Nielsen, 2009). These cafés are run on a commercial basis, and chat rooms, stock trading, and networked gaming are among the most popular applications. In his study of Bangalore Internet cafés, Nisbett (2006) found that while members of different socioeconomic classes frequented them, many used them for such mundane tasks as e-mail and Internet-related chat (IRC). Furthermore, the young men who were the immediate focus of Nisbett's study actively appropriated and shaped ICT spaces in ways that went beyond communication agendas to the acquisition of a broad range of IT skills.

---

[8] In virtually all of these design studies and their applications, at least one of the team members is of Indian descent and thus can act as a cultural broker for the design team as it develops and tests prototypes.

In rural areas, public technology access is most often provided in Internet kiosks set up by governments and NGOs; one study estimates that rural Internet kiosks could provide the first experience with ICT for as many as 700 million Indians (Rangaswamy, 2007a). However, Kumar (2004) found that rural Internet kiosks in Tamil Nadu were mostly frequented by male high school and college students of higher socioeconomic status. This means that, unless specific steps are taken to ensure that women and other marginalized groups can visit these public spaces and take advantage of the tools provided there, the technological marginalization of these sections of the Indian population will increase further (Sreekumar, 2006).

Social Networking Sites

According to a report released in February 2009, visits to social networking sites in India increased by 51% during 2008, to 19 million visitors in December 2008 (Comscore, 2009). Orkut is by far the most popular site, followed by Facebook. Still, academic studies of how young people use these sites are just beginning to emerge. A comparative study of Indian and U.S. university students showed many common communication patterns in their use of social networking sites (Marshall et al., 2008). What was more interesting were the differences, however, as Indian students' behavior seemed to be significantly more individualistic than that of U.S. students. This was surprising to the researchers, since Americans are thought to live in a more individualistic society. Concretely, almost 70% of Indian students made their profile public/visible for anyone to see, versus only 28.6% of U.S. students, who were more likely to make their profile visible to friends only. Indian students were also more likely to either engage a stranger contacting them, or to tell him/her to leave them alone, which was found to be in contrast with an (Indian) collectivist ethos that is supposed to be less trusting and more evasive with strangers. Indian students also had more online friends whom they had never met, which shows that they use social networking sites to make and sustain friendships, something that is not the case in the U.S. In sum, Indian students seemed less cautious about online privacy than their American counterparts (Marshall et al., 2008). Chat rooms in suburban areas, which are growing in number, are frequented by predominantly 18- to 22-year-old men who assume an online identity in order to meet new people (Rangaswamy, 2007a).

Of particular importance in the Indian youth context is the use of new media technologies as a bridge between traditional and modern forms of social networking, of which dating and marriage sites are a prime example. Adams and Ghose (2003) discuss the creation and use of matrimonial sites, where parents, and now individuals themselves, place want ads describing their particular attributes and desires for a marriage partner. While North American dating sites, such as Match.com, make the transactional nature of relationships more apparent, Indian sites like http://www.shaadi.com and others have extended and (in some cases) made easier the practices associated with arranged marriages. By allowing young people to place their own ads, such social networking sites are enabling them to navigate the tension between arranged and love marriages, providing a sense of choice for Indian youth operating within the constraints of Indian values surrounding education, status, caste, religion, and complexion (Sharma, 2008). One of the attributes that is sure to attract suitors is a job in the IT industry, preferably with industry giants such as Infosys and Wipro. Paying the school fees that allow young people to train for such jobs also leads to the reframing of traditional practices such as dowry payments (Xiang, 2007). In addition

to modernizing private practices such as arranged marriages, the Internet is also impacting the public realm in India.

Online Publics

Other articles in this special issue have commented on the fanning of nationalist sentiments by way of the Internet, especially in China (Wallis, this issue). While not to the same extent, debates around (anti)nationalism are one example of the creation of an online public sphere in India. In October 2006, the Bombay High Court served a notice to Google for allowing a hate campaign against India, in reference to an Orkut community called "We Hate India," which initially carried a picture of an Indian flag being burned and some anti-India content (*Times of India*, 2006). Even before the petition was filed, many Orkut users had noticed the community and were mailing or otherwise messaging their contacts on Orkut to report it as bogus to Google. The company eventually deleted the community, but not before it had spawned several "We Hate Those who Hate India" communities. In addition, prior to the 60th Independence Day of India, Orkut's main page was revamped, with a stylized Orkut logo written in the Devanagiri script in the Indian national colors. This shows the extent to which new media technologies in general, and social networking sites in particular, are embedded in the offline world of their users.

Caste-based communities on Orkut, such as the more than 1,000 Brahmin communities, as compared to the 200, mostly small, Dalit communities also reflect offline divisions in Indian society, and highlight the varying access to technological and other resources resulting from them (Mishra, 2009b). If higher castes have more opportunities to create online content, age-old inequalities can be further exacerbated by this modern medium.

The same holds true for political divisions. Especially the BJP-Hindu Nationalist movement has been deploying the Internet to spread its message (Chopra, 2008). During the 2009 national election, called India's "first digital election" (Mishra, 2009a), the BJP used blogs, social networking communities, Twitter, and its Web site to reach potential supporters. Young, urban, technology-savvy first-time voters were the most targeted groups during the election campaign, speaking to the growing power of young people and the increasing importance of urban voters. That the BJP was ultimately unsuccessful reveals, among other things, the limits of online politics. On the other hand, Dalits and other low castes are also using the Internet as a means of organizing (Thirumal, 2008; Chopra, 2006).

The organizing power of the Internet emerged most forcefully during the Mumbai attacks, when individuals set up blogs to provide vital information, for example about which hospitals needed blood donations, and to help relatives search for each other. Twenty-nine-year-old blogger Harish Iyer published his mobile phone number and e-mail address on a blog he set up soon after the attacks began (http://mumbaiTerrorHelpline.blogspot.com/). In the following 20 hours, he received around 60 phone calls and 100 e-mails from people desperate to find loved ones (Whiteman, 2008).

It was Twitter, however, that was the preferred medium of the "citizen journalists" who provided instant and constant news feeds and updates about the unfolding crisis. A CNN article estimated that 80 tweets were being sent to Twitter.com via SMS every five seconds (Busari, 2008). However, the deluge of messages also revealed some of the shortcomings of Twitter: on the one hand, the lack of proper

contextual information by most people sending the messages, and on the other the recycling of (sometimes incorrect) information. As blogger Tim Mallon put it, "I started to see an ugly side to Twitter, far from being a crowd-sourced version of the news it was actually an incoherent, rumour-fueled mob operating in a mad echo chamber of Tweets, re-Tweets and re-re-Tweets" (quoted in Busari, 2008). While the Internet can indeed facilitate the spreading of rumors and discriminatory feelings, it can also foster citizen engagement.

Government Initiatives

In July 2008, the Indian Ministry of Human Resources and Development recommended making blogging, community radio, robotic kits, and other technology devices part of public school curricula (Oneworld, 2008). The report states that "blogs are powerful tools to support creative writing that can be published and shared not only with the teacher but also with peers and the world, alike. Spreadsheets, databases, concept maps, and hypermedia authoring tools (Web development tools) to encourage critical thinking could also be encouraged." Blogs are indeed a good way to express critical thinking, if not always along officially sanctioned lines. The aftermath of the Delhi Public School Scandal led to intense online activities of young people affected by it in blogs and discussion fora. While the blogs were racier and packed with innuendoes against school administrators, the discussion fora raised issues of privacy, freedom, morality, and responsibility among the users of cell phones. The tenor of these discussions was that new media technologies are an invincible force that is here to stay (Ravindran, 2008). Their advance into Indian society cannot be stopped by government bans, which is a recurrent theme in the discussions around new media technology use.

Government initiatives also include the growing number of e-government programs that have been implemented in several Indian states to bring state and local governments closer to their citizens (Sreekumar, 2007; Schwittay, 2008). As is often the case with the use of technology for development, high hopes and facile assumptions about the possibilities of especially marginalized groups to learn about government services and apply for public benefits online have given way to more realistic assessments. These show the ways in which the design of media technologies has to take the political, socioeconomic, and cultural contexts of their use into account, in order to make meaningful differences in the lives of Indians, be they living at home or abroad.

NRIs in Cyberspace

NRIs, or Non-Resident Indians, is an official socio-legal category for Indians living outside of India. There are estimated to be 25 million of them, living mainly in neighbouring countries, as well as the United States, Malaysia, and the United Kingdom. Given these numbers, it is not surprising that much of the research on Indian Internet practices focuses on this broader Indian diaspora.

A recent edited volume examines the range of ways in which cyberspace helps to build bridges between India and the diaspora (Gajjala & Gajjala, 2008).[9] Its various articles focus on the IT industry, entertainment, and political movements as well as questions of belonging. What emerges from these

[9] This volume builds on a 2006 special edition of *New Media & Society* (Gajjala, 2006).

studies is the importance of who defines and participates in Internet practices in the context of an increasingly flexible global economy. Similarly, Mitra (2006) focuses on U.S.-based South Asian immigrants' use of "cybernetic safe spaces" to give voice to their Indian (immigrant) identity, which they are unable to express in other contexts. These online spaces are used to re-create cultural and religious practices of identity formation, as immigrants feel increasingly threatened by the sociopolitical and economic backlashes against them in a post-9/11 environment.

Even more personal are the cybershrines, virtual worship sites, and cultural and heritage portals that allow Indians abroad to access spirituality in a virtual way, and the majority of orders for products and services offered by these sites come from outside India (Barbar, 2001). Mallapragada (2006) looks at the relationship between home, homeland, and homepage and how the creation of an Indian–American web reflects the politics of belonging for NRIs. An important part of these politics is accessing news from back home, via newspapers and other news sources (Brosius & Butcher, 1999).

Once again, the potential of new media technologies to facilitate political participation and create online spheres of public engagement becomes visible. However, until more research on Indian participation on the Internet occurs (Tacchi, 2006), we do not know in what ways these discourses and practices are part and parcel of everyday Indians', and especially young people's, lives. Nor do we know the extent to which non-elites in India possess a voice in these networked public cultures. One area in which such participation has been fostered is new media production and consumption.

New Media Prosumption

The convergence of consuming and producing digital media has been termed "prosuming" (Lim & Nekmat, 2008). The term was coined 30 years ago by futurologist Alvin Toffler to refer to the blurring roles of consumers and producers as a result of mass customization (Toffler, 1980). Since then the word has taken on diverse, sometimes conflicting, meanings, ranging from the categorization of professionals-consumers as a market segment to producer-consumers as active participants in the economy. The confluence of production and consumption in prosumption refers to the creation of products and services by the people who will ultimately use them (Tapscott & Williams, 2006).

In the context of this article, prosuming flags the use by especially young Indians of new media technologies to create digital images, music, stories, videos, and other applications. This practice has been democratized with the increasing availability of technology tools to Indian children and teenagers from all socioeconomic strata. While finding avenues for creative expression is at the heart of prosuming, the objectives differ depending on the socioeconomic location of the practitioners. For more affluent, and usually male, youngsters, prosuming is often tied to commercial ends that try to capitalize on the growing middle-class youth market and its new customer potential for technology and other companies. Conversely, and similar to the Brazilian case (Horst, this volume), enabling poorer young Indians to produce digital media is seen as a way of giving them a voice to express their experiences and attitudes about their lives and neighborhoods. This has given rise to a body of literature that is primarily aimed at practitioners and is often published through development organizations, such as United Nations outlets. By contrast, academic writings on commercial prosumption are non-existent. This is also the case for gaming.

Gaming and its Discourses

India's gaming market and associated activities have grown dramatically over the last few years. According to Nasscom, the Indian IT industry's main association, the country's gaming segment—comprising mobile, computer, and console games and development—was estimated to grow from Rs 192 crore (US$3.8 million) in 2006 to Rs 1,700 crore (US$34 million) by 2010, equalling an annual growth rate of 72%. In spite of this increase, which is sustained by young men gaming in Internet cafés and increasingly on mobile phones, the industry has yet to make significant in-roads into the everyday lives of most Indians.

According to market research companies, the gaming expansion in India is pushed by growing broadband use; the spread of Internet cafés; an increasing—and increasingly affluent—middle-class; the emerging youth market; and inexpensive mobile prepaid game cards (IBEF, 2007). This expansion can also be ascertained from the fact that important gaming events and competitions are starting to be organized in India. On February 12, 2009, the first-ever "World Gaming Day," which was marketed as "the largest-ever youth connect initiative to celebrate gaming" by its organizers Sony Ericsson, Zapak.com, and Microsoft XBOX 36, was celebrated in Mumbai (*Indiatimes*, 2009). The event culminated four weeks of international gaming activities, with an estimated 19 million games played mostly in India, the United States, the United Kingdom, Australia, Singapore, Pakistan, Bangladesh, and Saudi Arabia. The flipside to this growth is the gaming industry's concern about increasing piracy, such as the unauthorized copying of original or downloaded computer games that are then for sale on the streets in Indian cities.

An important element of Indian gaming is its connection to the world of Bollywood, materializing in mobile phone games based on popular Bollywood films. The Bollywood classic *Devdas* gave rise to "Dev D," a mobile phone game that enables gamers to take on the persona of the film's main protagonist. The hope is that the mass appeal of such classics will translate into mass markets for the games. Similarly, the country's first 3D video game is inspired by the Bollywood hit thriller *Ghajini*, and at the World Gaming Day mentioned above, two Bollywood actors were on hand to congratulate the winners and extol the fun of playing games.

Most games are played in both urban and rural Internet cafés, mainly by boys and young men (Rangaswamy, 2007a; Toyama et al., 2007). In addition, Zapak.com, a leading game provider that is part of the Reliance Group, is building "gameplexes," which are dedicated cyber cafés that promote online gaming. Zapak is also aiming to expand gaming beyond the young men who until now have dominated the field, with a service called Zapakgirls.com, branded as "the world's largest/India's first ever/gaming destination for women," where strategy, puzzle, and arcade games can be found. The site also has fora with titles such as "Career," "Health & Fitness," "Love," "Fashion," "Family," and "Let Loose," where girl gamers can exchange their views on these topics.

Figure 2. *Zapakgirl Homepage (photo from www.zapakgirls.com).*

Similarly, Zapak Tiny provides games for 4- to 7-year-olds, in order to grow the next generation of gamers. One question is whether, as broadband use in Indian homes, which currently stands at about 0.37 per 100 (ITU, 2007), expands, game console usage will increase as well. A related question is whether this might give rise to new dimensions of the moral panic discourse, focusing on addiction or illness. Since gaming has not yet made significant inroads into Indian society at large, until now discourses of gaming addiction have been virtually non-existent, in contrast to countries like South Korea (Ok, this volume). The only such study of Internet use among 16- to 18-year-old students found that a significant number of them were "Internet dependent" (Kanwal & Anand, 2003).

On the other hand, in January 2008 a measure was introduced in the Indian parliament to ban violent video games. Rather than garnering large-scale support, the bill has been controversial because it was introduced by Mrs. Sharmila Tagore, a Bollywood star, after her grandson was given a copy of Manhunt 2, a popular but illegal video game in the UK. The reaction was one of outrage against attempts

of censorship aimed at citizens, rather than at the video game industry. As one of the contributors to the debate blogged:

> As with Internet usage, parents need to make their own informed decisions as to which games their kids get to play. In fact, video games can be great bonding activities between parents and their children and I have frequently seen fathers come with their kids to the local pirates and buy games for their children after much entertaining discussions. The Big Brother approach rarely works with Indian citizens, yet people revel in the same nevertheless. When children find creative ways of breaking family rules, how does the state with lax legal institutions and enforcement agencies curb adults from indulging in activities they don't consider to be illegal in the first place? Does censorship really work in India or is it just a paper tiger? Since when have we let these Bollywood actors and socialites dictate what the citizens of India can or cannot do? Maybe it's time Mrs Tagore sorted out her own house, paid more attention to the kind of games her grandkids played especially when the games have big letters saying MA printed on them instead of urging the government to babysit the nation's children at the expense of the tax payers hard earned money. Why should others pay for her blatant ignorance and negligence? (Lamba, 2008)

I am quoting this post at length because it provides a good summary of the dynamics of gaming in India: its male associations, its connection to Bollywood, its (contested) entertainment value, and piracy activities. More importantly, the post also speaks to a number of larger issues surrounding new media technologies, and how Indian society is negotiating these issues. Government or other bans that aim to reign in consumption of these technologies are usually met with protest from technology-savvy citizens using online media to argue that technological progress is inevitable.

Practices of new media consumption with a commercial bent can be found in the aforementioned Mobile Youth project. The Indian section was filmed by a young Indian called Amit in Bangalore in January 2009 and shows head shots of half a dozen young men, almost always with scooters in the background, talking about their mobile phones, service providers, and (dis)satisfaction with both. One-liners like "500 million Indian youth have yet to buy their first mobile phone" serve as a constant reminder of the appeal of the Indian youth market to IT companies looking for new customers. On the other end of the spectrum are programs that aim to give marginalized Indian children and youth a chance to make themselves heard.

Giving Voice

Development-focused digital media prosumption is rarely pursued for its own ends, but rather aims to give expression to questions of social, cultural, and political relevance (Horst, this volume). One such program is Mapping the Neighborhood, an initiative of the Centre for Science Development and Media Studies and funded by the national government's Department of Science and Technology. The project uses customized Geographic Information Systems (GIS) software for hand-held computers that allows participating children to produce community maps and in the process gather relevant information about the locality. This information in turn informs decision-making, planning, and development purposes at the

community level (Asthana, 2006). The aim of the project is to combine non-formal, participatory learning with community engagement and public participation through the use of ICTs. Schools participating in the project have also created their own Web sites.

A different way to foster children's online participation is through e-literacy story books (Arora, 2008). Arora's analysis focuses on the books' narratives and potential for participatory development. There are several media programs, such as Butterflies Alternate Media, that aim to give disenfranchised young Indians the opportunity to express themselves, including through more traditional media such as community newspapers, radio programs, and theatre productions. The Slum Jagattu Media group, which publishes a monthly magazine by young people living in slums, received a grant from the Adobe Corporation's Youth Voices program to expand its production into visual media, specifically documentary video. Participating students, ranging from 15 to 21 years of age, researched the history of slums in Bangalore and contrasted them to the image of the city as an international destination. The aim of these programs is to enable young people to share their views about the places in which they live and learn with the help of new media technologies. As in previous technology applications examined in this article, gender plays an important role in these prosumption activities.

In Delhi, public school students have used a grant from the same Adobe Youth Voices program to produce short videos about their gender-specific experiences of the interaction between home and school life. Many of these videos show young women talking about the double burden of school and housework they are expected to carry. One short is entitled "Freedom" and starts by showing a teenage girl trying to do her homework well past midnight. She is then awakened at 5 a.m. by her mother, declaring "Don't be so lazy" and sending her to start working in the kitchen. Her brother is called to get up an hour and a half later and exhorted to study, while she is cleaning. The mother admits that she loves the son more because he earns more money for the family and because the daughter will incur high expenses, for example at her wedding. The girl concludes that "it's a sin to be born a girl" and asks when she can have the freedom to live her life. The video ends with a male teacher talking about the importance of educating girls, and with shots of girls playing carefree in a park.

"Freedom" *[video] from www.youtube.com*

The participation of young women in these new media productions is notable, especially in contrast to the male-dominated commercial sphere of IT use, and stems from the explicit mandate of development projects to ensure that women have an equal opportunity to use new media technologies to express themselves.

This can also be seen in the *Finding a Voice* project, which examined, through the use of ethnographic action research and participatory content creation, "how creative engagement with ICT can be both effective and empowering for positive social change" in marginalized communities across Asia (Finding a Voice, n.d.). The project, which had five sites in India, was funded in part by UNESCO and the UNDP, and the publications resulting from it have been mainly aimed at practitioners, policy strategists, and decision makers (Tacchi & Kiran, 2008; Watkins & Tacchi, 2008; Skuse et al., 2007).

Perhaps the best-known digital media prosumption program is Cybermohalla, which was established in 2001 through a collaboration between Sarai, the new media initiative of the Center for the Study of Developing Societies, one of India's leading research institutes, and Akur, an NGO in Delhi (Lim & Nekmat, 2008; Asthana, 2006). Cybermohalla (Hindi for cyberneighborhood) is a network of three locality labs in Delhi slums, which over the past seven years have involved close to 450 young men and women, mostly school dropouts, to work with a variety of traditional and multimedia tools to develop, capture, and communicate their perspectives about the places in which they live. The results are blogs, three books of collected conversations, an animation CD, and postcards. The Cybermohalla Web site also has a section called Tech Conversations, where young people reflect on their encounters with technology and how it shapes their relationship with the neighborhood around them. In addition, participants make videos using digital cameras and mobile phones, animation and animated stories using GIMP (a GNU Image Manipulation Program), and recordings of conversations and sounds.

Cybermohalla has been analyzed as the emergence of a cyber-public imagined community within the Indian cultural context (Nayar, 2008), and as a way to teach media literacy skills through raising cultural competencies (Lim & Nekmat, 2008). More broadly, it has been used to sketch a theory of new media that addresses the potential of digital technologies as "a staging space for activism and protests," not only represented in a "de-materialized realm of free floating information," but also in a very immediate and material context (Asthana, 2007, p. 3). While the spaces for dialogue that have been opened up for the young, disenfranchised Cybermohalla participants are thought to create a forum for collective action (Asthana, 2006), this potential seems to be subverted by the ways in which these participants have been cordoned off from their wider society. Apparently, outsiders have been denied access to the labs because they would disrupt their creative energy (Lovink, 2006), and even the larger Sarai community has not been included into the dialogue of the Cybermohalla youth.

Indian media prosumption projects sometimes join larger online networks such as the International Education and Resource Network (iEARN), which is a "global network that enables teachers and youth to use the Internet and other technologies to collaborate on projects that enhance learning and make a difference in the world" (http://www.iearn.org/). These sites combine social networking and digital media prosumption to mobilize young people around the world, including India, to produce global dialogue and engagement by way of the Internet. Emerging analyses of such local and global online public spheres can advance academic explorations of new media studies in exciting ways (Nayar, 2008; Asthana, 2007).

Concluding Thoughts

As this review has shown, in India new media technologies create spaces where the old meets the new, and where the tensions around this encounter are played out. Descriptions like "school kids on the street corners swarming around the mobilewallah pushing his cart and generator peddling the latest Nokia N Series amidst a backdrop of chickens, cows, temples, noise, dirt and traffic" are often capturing the scenes in journalistic and popular accounts (MobileYouth, 2008).

Figure 3. *A rickshaw puller in Delhi checking his SMS inbox (photo from http://www.flickr.com).*

In the academic literature, the occurrence of critical incidences such as the Delhi Public School Scandal has led some scholars to argue for the emergence of a morally charged discourse and cultural politics around new media technology prosumption by the country's youth. This is especially visible when it comes to technology's potential to subvert or outright challenge traditional norms of gender, sexuality, and family relations. Such public fears, and their materialization in government attempts to restrict or ban new technologies, are countered by claims about the inevitable advance of technological progress, claims that are usually made and disseminated by way of the same technologies.

Secondly, India continues to be a laboratory for experiments that use new media technologies for development purposes. ICTD programs can be found across all technology and media types—indeed, the convergence between different platforms is found in India as much as in other countries under study in this issue—and aim to harness the power and potentials of new technologies to improve livelihoods, education, health, and government services. It is in this area where the majority of the academic

literature is concentrated, giving rise to mainly descriptive case studies by and for scholar-practitioners, and to a lesser extent development experts. After the initial hype with which ICTD projects were received, studies that critically examine the developmental potential of new technologies through situating their deployment in specific sociocultural, political, and economic contexts are beginning to emerge.

Thirdly, while the explicit commercialization of new media practices has not received much scholarly attention, the articulation of development and commercial activities in BoP projects is the purview of hybrid research organizations such as MRI, which pursues ethnographic research on new media practices with commercial ends in mind. This seems a unique feature of the Indian literature, resulting from the country's commercial potential, but informs the larger body of work through MRI researchers' active participation in academic conferences and publications, especially in the ICTD area.

Looking forward, research embedding technology consumption and production in young Indians' everyday lives is one of the most promising avenues for future scholarship. Others are studies of localization, especially of the creative appropriations of new media technologies by Indian youth to reflect their own life experiences. Because the prosumption of new media technologies in India is so dynamic, its analysis can yield important insights for advancing more theoretical studies of new media. If the present record is anything to go by, Indian scholars will participate in this scholarship in equal if not larger measures to non-Indians, and because the former frequently publish in English, their analyses of the multifaceted and creative ways in which Indian youth engage with new media technologies will be accessible to a broad audience.

References

Abraham, R. (2007). Mobile Phones and Economic Development: Evidence from the Fishing Industry in India. *Information Technologies and International Development, 4*(1), 5–17.

Adams, P., & Ghose, R. (2003). India.com: The construction of a space between. *Progress in Human Geography, 27*(4), 414–437.

Arora, P. (2008). Instant messaging Shiva, flying taxis, Bil Klinton and more: Children's narratives from rural India. *International Journal of Cultural Studies, 11*(1), 69–86.

Asthana, S. (2006). *Youth media: A research study on 12 initiatives from around the developing and underdeveloped regions of the world*. New York: UNESCO. Retrieved from http://unesdoc.unesco.org/images/0014/001492/149279e.pdf

Asthana, S. (2007). *Sketching a theory of new media: The case of Cybermohalla from India*. Paper presented at MiT5 conference, Cambridge, MA.

Barbar, A. (2001). Diaspora, cybershrines and the woman's question in media (review article). *Gender, Technology and Development, 5,* 289.

Brewer, E., et al. (2007). The challenges of technology research for developing regions. *IEEE Pervasive Computing, 5*(2), 15–23.

Brosius, C., & Butcher, M. (Eds.). (1999). *Image journeys: Audio–visual media and cultural change in India.* New Delhi: Sage.

Busari, C. (2008, November 28). Tweeting the terror: How social media reacted to Mumbai. Retrieved September 14, 2009, from http://edition.cnn.com/2008/WORLD/asiapcf/11/27/mumbai.twitter/

Chakraborty, S. (2006). *Mobile phone usage patterns amongst university students: A comparative study between India and USA*. M.S. thesis submitted to University of North Carolina at Chapel Hill.

Chopra, R. (2006). Global primordialities: Virtual identity politics in online Hindutva and online Dalit discourse. *New Media & Society, 8*, 187–206.

Chopra, R. (2008). The virtual state of the nation: Online Hindu nationalism in global capitalist modernity. In R. Gajjala and V. Gajjala (Eds.), *South Asian technospaces* (pp. 153–178). Digital Formations, 36, New York: Peter Lang Verlag.

Comscore. (2009). *India's Social Networking Market sees Global Brands Gain Prominence.* Retrieved November 15, 2009, from http://www.comscore.com/press/release.asp?press=2728

Donner, J. (2007). The rules of beeping: Exchanging messages via intentional 'missed calls' on mobile phones. *Journal of Computer-Mediated Communication, 13*(1).

Donner, J. (2008). Research approaches to mobile use in the developing world: A review of the literature. *The Information Society, 24*(3), 140–159.

Donner, J., Rangaswamy, N., Steenson, M. W., & Wei, C. (2008). 'Express yourself' and 'Stay together': The middle-class Indian family. In J. Katz (Eds.) *Handbook of mobile communication studies* (pp. 325–338). Boston: MIT Press.

Donner, J., & Tellez, C. (2008). Mobile banking and economic development: Linking adoption, impact, and use. *Asian Journal of Communication, 18*(4), 318–332.

Donner, J. (2009). Mobile media on low-cost handsets: The resiliency of text messaging among small enterprises in India (and beyond). In G. Goggin and L. Hjorth (Eds.) *Mobile technologies: From telecommunications to media* (pp. 93–104). New York and London: Routledge.

Finding a Voice. (n.d.). Retrieved March 16, 2009, from http://www.findingavoice.org/

Friedman, T. (2005, September 16). Still eating our lunch. *The New York Times*. Retrieved March 16, 2009, from http://www.nytimes.com

Gajjala, R. (2006). Editorial: Consuming/producing/inhabiting South-Asian digital diasporas. *New Media & Society, 8*, 179.

Gajjala, R., & Gajjala, V. (Eds.). (2008). *South Asian technospaces*. Digital Formations, 36, New York: Peter Lang Verlag.

Hearn, R. (2006). *Prepaid connections: Global dominance assured*. Report published by Wireless Intelligence. Retrieved September 13, 2009, from http://www.gsmap.org/wp-content/uploads/files/prepaid%20 connections037215.pdf

Horst, H. (this issue). New Media Practices in Brazil. *International Journal of Communication.*

IBEF. (2007, November 28). Gaming in India set to grow 72 per cent by 2010–11. Retrieved March 15, 2008, from http://www.ibef.org/GenericMessage.aspx?subtitletext=Business+Standard&Title=Gaming+in+India+set+to+grow+72+per+cent+by+2010-11&SubTitles=http%3a%2f%2fwww.businessstandard.com%2fcommon%2fstorypage.php%3fautono%3d305720%26leftnm%3d8%26subLeft%3d0%26chkFlg%3d&fdate=November+28%2c+2007 (article since moved from site)

Indiatimes. (2009, February 6). Retrieved November 15, 2009, from http://economictimes.indiatimes.com/Infotech/Software/Sony_XBOX_announce_World_Gaming_Day_on_Feb_12/articleshow/4090144.cms

Ingene. (2008). Retrieved November 14, 2009, from http://ingene.blogspot.com/2008/08/indian-youth-lifestyle.html

Iqbal, T. (2007). *Gender inequalities in access and use of telecom at the bottom of the pyramid? Findings from a five country study*. Paper presented at International Workshop on ICTs and Development: Experiences from Asia. National University of Singapore, Singapore.

IT Facts. (2009). *391.8 million mobile subscribers in India in March 2009*. Retrieved April 15, 2009, from http://www.itfacts.biz/3918-mln-mobile-subscribers-in-india-in-march-2009/12961

ITU. (2007). *ICT Statistics*. Retrieved March 15, 2009, from http://www.itu.int/ITUD/icteye/DisplayCountry.aspx?code=IND

Jensen, R. (2007). The digital provide: Information (technology), market performance and welfare in the South Indian fisheries sector. *The Quarterly Journal of Economics 72(*3), 879–924.

Jha, R. (2008). Economic reforms and human development indicators in India. *Asian Economic Policy Review, 3*(2), 290–310.

Kam, M., Kumar, A., Jain, S., Mathur, A., & Canny, J. (2009) *Improving literacy in rural India: Cellphone games in an after-school program.* Paper presented at 3rd IEEE/ACM Conference on Information and Communication Technology and Development (ICTD 2009), Doha, Qatar.

Kam, M., Rudraraju, V., Tewari, A., & Canny, J. (2007). *Mobile gaming with children in rural India: Contextual factors in the use of game design patterns.* Paper presented at Digital Games Research Association Conference (DiGRA), Tokyo, Japan.

Kanwal, N., & Anand, A. (2003). Internet addiction in students: A cause of concern. *CyberPsychology & Behavior, 6*(6), 653–656.

Kavoori, A. & Chanda, K. (2006). The Cell phone as a Cultural Technology: Lessons from Indian Case. In A. Kavoori and N. Arceneaux (Eds.), *The Cell Phone Reader: Essays in Social Transformation*. (pp. 96-123). New York: Peter Lang.

Kumar, K., & Thomas, A. (2006). Telecommunications and development: The cellular mobile 'revolution' in India and China. *Journal of Creative Communications 1*, 297.

Kumar, R. (2004). *Social, governance, and economic impact assessment of information and communication technology interventions in rural India*. Thesis submitted to the Department of Urban Studies and Planning, MIT, Cambridge, MA.

Lamba, D. (2008, January 9). Government to Regulate Videogames in India. [Web log comment]. Retrieved March 15, 2009, from http://desicritics.org/2008/01/09/071938.php

Leung, L. (2008). From 'victims of the digital divide' to 'techno-elites': Gender, class, and contested 'Asianness' in online and offline geographies. In R. Gajjala and V. Gajjala (Eds.), *South Asian technospaces* (pp. 7–24). Digital Formations, 36, New York: Peter Lang Verlag.

Lim, S., & Nekmat, E. (2008). Learning through prosuming: Lessons from media literacy programs in Asia. *Science, Technology and Society, 13*(2), 259–278.

Lovink, G. (2006). *Revisiting Sarai: Five years of new media culture in India*. Sarai Waag Exchange Platform. Retrieved September 15, 2009, from http://waagsarai.waag.org/?p=71

Mallapragada, M. (2006). Home, homeland, homepage: Belonging and the Indian–American web. *New Media & Society, 8*, 207–227.

Marshall, B. A., Cardon, P. W., Norris, D. T., Goreva, N., & D'Souza, R. (2008). Social networking web sites in India and the United States: A cross-national comparison of online privacy and communication. *Issues in Information Society, 9*(2), 87–94.

McKenzie, D. (2007). *Youth, ICTs and development*. Paper published by the World Bank Group. Retrieved September 16, 2009, from http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:21698394~pagePK:64165401~piPK:64165026~theSitePK:469382~isCURL:Y~isCURL:Y,00.html

McMillin, D. (2008). Around sourcing: Peripheral centers in the global office. In R. Gajjala and V. Gajjala (Eds.), *South Asian technospaces* (pp. 249–264). Digital Formations, 36, New York: Peter Lang Verlag.

Mishra, G. (2009a, April 17). India's first digital elections evoke strong reactions online. [Web log comment]. Retrieved September 14, 2009, from http://www.gauravonomics.com/blog/indias-first-digital-elections-evoke-strong-reactions-online/

Mishra, G. (2009b, June 9). Caste-based communities on Orkut mirror India's splintered society. [Web log comment]. Retrieved September 14, 2009, from http://www.gauravonomics.com/blog/caste-based-communities-on-orkut-mirror-indias-splintered-society/

Mirchandani, K. (2008). Practices of global capital: Gaps, cracks, and ironies in transnational call centers in India. In R. Gajjala and V. Gajjala (Eds.), *South Asian technospaces* (pp. 225–248). Digital Formations, 36, New York: Peter Lang Verlag.

Mitra, A. (2006). Towards finding a cybernetic safe place: Illustrations from people of Indian origin. *New Media & Society, 8*, 251–268.

Mitra, A. (2008). Working in cybernetic space: Diasporic Indian call center workers in the outsourced world. In R. Gajjala and V. Gajjala (Eds.), *South Asian technospaces* (pp. 205–224). Digital Formations, 36, New York: Peter Lang Verlag.

Mitra, S. (2005). Self organizing systems for mass computer literacy: Findings from the hole in the wall experiments. *International Journal of Development Issues, 4*(1), 71–81.

Mitra, S., Dangwal, R., Chatterjee, S., Jha, S., Bisht, R., & Kapur, P. (2005). Acquisition of computer literacy on shared public computers: Children and the 'Hole in the Wall.' *Australasian Journal of Educational Technology, 21*(3), 407–426.

Mitra, S., & Rana, V. (2001). Children and the Internet: Experiments with minimally invasive education in India. *British Journal of Educational Technology, 32*(2), 221–232.

MobileYouth. (2008) Retrieved November 15, 2009, from http://www.mobileyouth.org/post/indian-mobile-youth-by-2012-one-in-5-of-worlds-mobile-youth-will-live-in-india-video/

Nayar, P. (2008). New media, digitextuality and public space: Reading cyber-mohalla. *Postcolonial Text, 4*(1).

Nielsen. (2009). *Cyber Cafe Audience Profile in India.* Report published by Nielsen Ratings Agency. Retrieved November 15, 2009, from http://docs.google.com/gview?a=v&q=cache:FmSKIhZhWjUJ:www.ideacts.com/Cyber_Cafe_Audience_Profiling_Nielsen_2009.pdf+computer+ownership+india+2009&hl=en

Nisbett, N. (2006). *Growing up connected: The role of cybercafés in widening ICT access in Bangalore and South India*. Paper presented at the Development Studies Association Annual Conference2005, Milton Keynes, UK.

Oneworld. (2008, July 31). *Indian schools to use new age technology*. Retrieved March 15, 2009, from http://southasia.oneworld.net/ictsfordevelopment/indian-schools-to-use-new-age-technologies

Ok, H. (this issue). New Media Practices in South Korea. *International Journal of Communication.*

Pal, J. (2003). The developmental promise of information and communications technology in India. *Contemporary South Asia, 12*(1), 103–119.

Pal, J., Lakshmanan, M., & Toyama, K. (2007). *My child will be respected: Parental perspectives on computers in rural India.* Paper presented at 2nd IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD 2007), Bangalore, India.

Parayil, G. (2005). The Digital Divide and Increasing Returns: Contradictions of Informational Capitalism. *The Information Society, 21*(1), 41–51.

Pawar, U., Pal, J., & Toyama, K. (2006). *Multiple mice for computers in education in developing countries.* Paper presented at 1st IEEE/ACM International Conference on Information and Communication Technologies and Development (ICTD 2006), Berkeley, USA.

Paul, R. (2009, April 27) With no $10 laptop in sight, India buys 250,000 OLPCs. *ArsTechnica*. Retrieved September 13, 2009, from http://arstechnica.com/gadgets/news/2009/04/india-embraces-olpc-buys-250000-xo-laptops.ars

Prahalad, C. K., & Hammond, A. (2002). Serving the world's poor, profitably. *Harvard Business Review*, (September), 48–57.

Prahalad, C.K. (2005) *The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profit and Enabling Dignity and Choice through Markets.* Upper Saddle River, NJ: Wharton School Publishing.

Rangaswamy, N. (2007a). *ICT for development and commerce: A case study of Internet cafés in India*. Paper presented at 9th international conference on social implications of computers in developing countries. Sao Paolo, Brazil.

Rangaswamy, N. (2007b). *The aspirational PC: Home computers and Indian middle class domesticity.* Unpublished paper prepared for Microsoft Research India. Retrieved March 15, 2009, from http://research.microsoft.com/en-us/um/people/nimmir/nimmirdomesticicts.htm

Raval, N. (2007). Retrieved March 15, 2009, from http://rdvp.org/fellows/2006-2007/netika-raval/

Ravindran, G. (2007). *Moral panics and mobile phones: The cultural politics of new media modernity in India*. Paper presented at the Living the Information Society Conference. Manila, Philippines.

Ravindran, G. (2008). *The cultural politics of new media modernity in India: Reading the roles of moral panic agents and mobile phone Users*. Paper presented at International Workshop on ICTs and Development: Experiences from Asia. National University of Singapore, Singapore.

Reuben, A. (2007). Mobile phones and economic development: Evidence from the fishing industry in India. *Information Technologies and International Development, 4*(1), 5–17.

Schwittay, A. (2008). A living lab: Corporate delivery of ICT in rural India. *Science, Technology and Society*, *13*(2), 175 – 207.

Sharma, A. (2008). Caste on Indian marriage dot-com: Presence and absence. In R. Gajjala and V. Gajjala (Eds.), *South Asian technospaces* (pp. 135–152), Digital Formations, 36, New York: Peter Lang Verlag.

Shome, R. (2006). Thinking through the diaspora: Call centers, India, and a new politics of hybridity. *International Journal of Cultural Studies, 9*(1), 105–124.

Skuse, A., Fildes, J., Tacchi, J., Martin, K., & Baulch, E. (2007). *Poverty and digital inclusion: Preliminary findings of finding a voice.* New Delhi: UNESCO.

Sooryamoorthy, R., Miller, P., & Shrum, W. (2008). Untangling the technology cluster: Mobile telephony, Internet use and social ties. *New Media & Society, 10,* 729 – 42.

Sreekumar, T. T. (2006). ICTs for the rural poor: Civil society and cyber-libertarian developmentalism in India. In G. Parayil (Ed.), *Political Economy and Information Capitalism in India: Digital Divide Development and Equity* (pp. 61–87), London: Palgrave Macmillan.

Sreekumar, T. T. (2007). Decrypting e-governance: Narratives, power play and participation in the Gyandoot Internet. *Electronic Journal of Information Systems in Developing Countries, 32*(4), 1–24.

Steenson, M., & Donner, J. (2009). Beyond the personal and private: Modes of mobile phone sharing in urban India. In R. Ling & S. Campbell (Eds.), *The Reconstruction of Space and Time: Mobile Communication Practices* (pp. 231–250). Piscataway, NJ: Transaction.

Tacchi, J. (2006). *Information, communication, poverty and voice*. Paper presented at Mapping the New Field of Communication for Development and Social Change Conference, Queensland, Australia.

Tacchi, J., & Kiran, M. (Eds.). (2008) *Finding a voice: Themes and discussion*. New Delhi: UNESCO.

Tapscott, D., & Williams, A. (2006). *Wikinomics: How Mass Collaboration Changes Everything.* New York: Portfolio.

Tenhunen, S. (2008). Mobile technology in the village: ICTs, culture, and social logistics in India. *Journal of the Royal Anthropological Institute, 14*(3), 515–534.

The Hindu. (2009). India manages to clock 6.7% growth in 2008–09. *The Hindu.* Retrieved September 14, 2009, from http://www.hindu.com/2009/05/30/stories/2009053054191300.htm

Thirumal, P. (2008). Situating the new media: Reformulating the Dalit question. In R. Gajjala and V. Gajjala (Eds.), *South Asian technospaces* (pp. 97–122), Digital Formations, 36, New York: Peter Lang Verlag.

Times of India. (2006, October 10). Google's social networking site in trouble. Retrieved March 15, 2009, from http://timesofindia.indiatimes.com/articleshow/2136970.cms

Toffler, A. (1980). *The Third Wave: The Classic Study of Tomorrow.* Mass Market Paperback.

Toyama, K., Kiri, K., Ratan, M., Nileshwar, A., Vedashree, R., & MacGregor, & R. F. (2007). *Rural kiosks in India*. Unpublished paper from Microsoft Research India.

Vaswani, K. (2009, January 8). Satyam scandal shocks India. *BBC News*. Retrieved November 22, 2009, from http://news.bbc.co.uk/2/hi/business/7818220.stm

Vital Wave Consulting. (2009). *MHealth for development: The opportunity for mobile technology for healthcare in the developing world*. Washington D.C. and Berkshire UK: Un Foundation–Vodafone Foundation Partnership. Retrieved from http://www.unfoundation.org/global-issues/technology/mhealth-report.html

Wallis, C. (this issue). New media practices in China: Youth patterns, processes, and politics*. International Journal of Communication.*

Watkins, S., & Tacchi, J. (Eds.) (2008). *Participatory content creation for development: Principles and practices.* New Delhi: UNESCO.

Whiteman, H. (2008, November 28). Blogging in the wake of terror. *CNN Asia*. Retrieved September 14, 2009, from http://edition.cnn.com/2008/WORLD/asiapcf/11/27/bloggers.mumbai/index.html

World Bank. (2006). *ICT Indicators*. Washington D.C.: World Bank.

Xiang, B. (2007). *Global 'body shopping:' An Indian labor system in the global technology industry*. Princeton, NJ: Princeton University Press.